

Listing of Claims:

1. (previously presented) An electrical assembly for use in an electrical system in which arcing can occur during unmating of two matable parts of an electrical connector connectable between a source and a load, each mating part comprising separable terminals positioned within separable housings, the electrical assembly comprising the electrical connector and a solid state relay, wherein the electrical connector is connected to the solid state relay so that the solid state relay shifts to an open state, disconnecting the source from the load through the relay, after commencement of unmating of the electrical connector, but prior to initiation of arcing between the two parts of the electrical connector.
2. (original) The electrical assembly of claim 1 in which the solid state relay includes a power MOSFET comprising a primary switching member, the power MOSFET switching between ON and OFF states without arcing to which an electromechanical relay would be subject.
3. (previously presented) An electrical system including an electrical connector and a solid state relay attached to the connector to prevent arcing when mating contacts in the electrical connector are disconnected, the electrical system comprising:
 - the electrical connector including first mating contact means second mating contact means, first contact means in one electrical connector housing being joined to second contact means in the same housing, the first mating contact means having sufficient current carrying capacity to carry the entire current through the connector, the second mating contact means being disconnectable prior to disconnection of the first mating contact means;
 - the solid state relay including a power MOSFET, the second mating contact means being connected to the solid state relay so that the power MOSFET is switched off when the second mating contact means are disconnected but prior to disconnection of the first mating contact means so that no current is carried by the first mating contact means when the first mating contact means are disconnected.
4. (original) The electrical system of claim 3 wherein the first mating contact means comprises first mating pin and receptacle contacts and the second mating contact

means comprises second mating pin and receptacle contacts, the second mating pin contacts being shorter than the first mating pin contacts so that the second mating contact means is disconnected prior to disconnection of the first mating contact means as the electrical connector is unmated.

5. (original) The electrical system of claim 3 wherein the second mating contact means comprises a shunt engaging one contact terminal matable with a second contact terminal to form the first mating contact means, the shunt being disengaged from the one contact terminal before the one contact terminal is unmated from the second contact terminal as the electrical connector is unmated.

6. (previously presented) The electrical system of claim 3 wherein disconnection of the second contact means disconnects the MOSFET drain from a sense circuit to charge up the MOSFET gate voltage to the MOSFET source voltage to turn the MOSFET to an OFF state.

7. (original) The electrical system of claim 3 wherein the solid state relay floats relative to ground when the power MOSFET is off, to eliminate leakage current between a battery and ground.

8. (original) The electrical system of claim 3 wherein the solid state relay is connected between a positive battery terminal and a load.

9. (original) The electrical system of claim 3 wherein current through the power MOSFET is turned on by an active low gate input.

10. (original) The electrical system of claim 9 wherein the relay includes a monitoring circuit connected to monitor the voltage drop between source and drain of the power MOSFET, an increase in the source - drain voltage drop, above a reference voltage, resulting in a high signal at the gate to turn the power MOSFET off.

11. (original) The electrical system of claim 3 wherein the second contact means is at a voltage substantially equal to a voltage at the drain of the power MOSFET, when the second contact means are in a mated configuration.

12. (original) The electrical system of claim 3 including multiple parallel power MOSFET's.

Claims 13-28 (canceled)